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COMPARATIVE RESULTS OBTAINED BY THE USE OF LACTOSE-BILE AND DEXTROSE-BROTH MEDIA FOR THE DETECTION OF *B. COLI* IN WATER.

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FOR some little time past comparative tests have been made with the use of dextrose-broth and lactose-bile media in the preliminary enrichment tubes in the examination for *B. coli* in the raw and filtered water of the Tennessee River at the Laboratory of the Knoxville Water Company, Knoxville, Tennessee.

The lactose bile has been prepared from fresh local ox-bile to which 1 per cent of lactose has been added just before sterilization. The dextrose-broth has been prepared according to the directions given in the "Standard Methods of Water Analysis."[1]

The method used in the isolation of *B. coli* has been that prescribed by the Standard Methods. We have not, however, attempted to rejuvenate, by successive enrichment, debilitated forms which have lost some of their powers to react with the various media.

In recording results failure to give the correct gas ratio with dextrose-broth, or failure to give the indol reaction with the peptone solution, have been classed as atypical, while cultures which fail owing to the liquefaction of gelatin have been classed as belonging to the *B. cloacae* group. We have made comparative results with 63 samples of water. Of this number, 21 gave no gas formation with either media, 18 gave gas formation with both media, and 24 gave gas formation with dextrose-broth, but not with lactose-bile.

It has been our observation that the formation of gas takes place much less rapidly in the lactose-bile than in the dextrose-broth medium, there being a comparatively small amount of gas formed in the first 24 hours. In some cases more than 24 hours were required before the appearance of gas was noted in the lactose-bile solution. In no case did the amount of gas formed in 48 hours exceed 65 per cent of the closed arm of the tube, while the average amount was

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[1] *Jour. Infect. Dis.*, Supplm. 1, 1905, p. 1.

43 per cent. The ratio of CO_2 to the total gas in the tubes containing lactose bile varied very much as the ratio varies in the case of dextrose broth.

The isolation results obtained from the preliminary cultivation tubes of the 18 samples which gave gas formation with both dextrose-broth and lactose-bile are as follows:

No. Samples	Dextrose-Broth	Lactose-Bile
4	Typical *B. coli*	Typical *B. coli*
1	Typical *B. coli*	Atypical form
1	Streptococci	Typical *B. coli*
3	Atypical forms	Atypical forms
1	Streptococci	Atypical form
4	*B. cloacae*	Atypical forms
4	*B. cloacae*	*B. cloacae*

It is seen that the results of the isolation from the lactose-bile enrichment were with four exceptions either the typical *B. coli* or very closely related forms. The microscopical examination of the cultures from the lactose-bile enrichment tubes showed pure cultures whose physical characteristics agreed with those of *B. coli.*

It is possible that, in those cases where atypical results were obtained, positive results might have been obtained by further rejuvenation in nutrient broth.

Of the 24 samples showing gas formation with dextrose-broth but not with lactose-bile, the following results were obtained:

No. Samples	Dextrose-Broth
1	Typical *B. coli*
7	Atypical forms
2	Streptococci
2	*B. cloacae*
9	Failure on litmus lactose agar
3	Negative forms not classified above

We make no comments on the results, but simply state the facts as observed thus far by us in the comparative use of the two media.